

What is claimed is:

- 1) An aptamer selected from the group consisting of SEQ ID No. 21, SEQ ID No. 22 through SEQ ID No. 151, and those aptamers listed in Table 13.
- 2) A therapeutic composition for treating subjects having HIV-infection comprising an aptamer selected from the group consisting of SEQ ID No. 21, SEQ ID No. 22 through SEQ ID No. 151, and those aptamers listed in Table 13.
- 3) A method of treating HIV infection in a subject comprising the steps of administering to a subject a therapeutically effective amount of a composition comprising an aptamer selected from the group consisting of SEQ ID No. 21, SEQ ID No. 22 through SEQ ID No. 151, and those aptamers listed in Table 13 in a pharmaceutically acceptable form.
- 4) The method of claim 3, wherein said aptamer is complexed with a toxin moiety toxic to HIV particles or cells.
- 5) A method of diagnosing HIV infection in a sample comprising providing a sample from a subject suspected of HIV exposure, contacting the sample with an aptamer having a sequence selected from the group consisting of SEQ ID No. 21, SEQ ID No. 22 through SEQ ID No. 151, and those aptamers listed in Table 13, said aptamer complexed with a reporter moiety, wherein a signal is generated upon binding to an HIV target.
- 6) A method of treating HIV infection in a subject comprising the steps of administering to a subject a therapeutically effective amount of a composition comprising an aptamer that inhibits or blocks fusion of the viral and cell membranes.
- 7) The method of claim 6, wherein the aptamer blocks or inhibits the ability of gp41 to form a hairpin-like structure.